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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,227	01/27/2006	Michael Guggemos	36605	3740
John F McNulty Paul & Paul 2900 Two Thousand Market Street Philadelphia, PA 19103			EXAMINER VAN, LUAN V	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 11/02/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,227

Applicant(s)

GUGGEMOS ET AL.

Examiner

LUAN V. VAN

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5-23 and 35-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-23, and 35-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date July 14, 2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendment of September 24, 2009 does not render the application allowable. Claims 1, 2, 5-23, and 35-52 are pending in the present application.

Status of Objections and Rejections

All rejections from the previous office action are maintained.

New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 5-23, and 35-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amended limitation in independent claims 1 and 35 reciting that the contacting electrode and the electrolysis region are spaced "no more than the few centimeters apart" is deemed to be new matter, because the specification does not

support this limitation. The specification, on page 5 line 33 -- page 6 line 6, states that the spacing should be minimized and chosen so that structures of for example 5 cm can be treated. However, the specification does not that the spacing is "no more than the few centimeters apart" as claimed. In addition, the specification does not support that the electrolysis region is "less than 5 cm in length", but simply that the treated structures can be 5 cm. Therefore, the amended limitations are deemed to be new matter.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 5, 8-14, 17-23, 35-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. (US patent 5425862).

Regarding claims 1 and 35, Hartmann et al. teaches a device for electroplating a substrate, said device comprising: a) at least one arrangement, comprising at least one electrode (9-16, Fig. 1) for contacting the work pieces (1) and at least one electrolysis region in a respective one of which at least one counter electrode (24, 25) and the work pieces (1) are in contact with the processing liquid, characterized in that b) the at least one contacting electrode (9-16) is disposed outside of the at least one electrolysis region and is not in contact with the processing liquid, and c) the at least one contacting electrode (9-16) and the at least one electrolysis region are spaced so close together that small electrically conductive structures can electrolytically be treated, further characterized in that d) at least two contacting electrodes (9-16) are provided, at least

one of them being disposed on one side of the electrolysis region and the at least other one on the other side of the electrolysis region (i.e., the electrodes 9-16 are provided on both sides of the electroplating chambers 6-8, see Fig. 1), and e) the electrolysis region are in constant electrical contact with one of the contacting electrodes (9-16).

Hartmann et al. differs from the instant claims in that the reference does not explicitly teach the specific spacing of the contacting electrode and electrolysis region or the length of the electrolysis region.

However, Hartmann et al. teaches that the spacing between two bonding devices (i.e., electrodes) following one behind the other in the direction of movement of the plastic film should preferably not be too great, so that that voltage drops within the plastic film do not result in non-uniform electroplating (column 2 lines 58-63). Furthermore, the length of the individual electroplating chambers is governed by the permissible voltage drop within the plastic film (column 2 lines 66-68).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the spacing between the contacting electrode and electrolysis region and the length of the electrolysis region through routine experimentation in order to minimize the voltage drop within the substrate, as suggested by Hartmann et al. Furthermore, it is understood to one having ordinary skill in the art that when designing an apparatus, the size and relative proportion of the apparatus features can be selected to have the appropriate dimensions in order to accommodate the substrate to be treated. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232

(1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP 2144.04(IV)).

Further addressing claim 35, Hartmann et al. teaches a tampon of soft, open-pored plastic foam (column 4 lines 10-20) is positioned on both sides between the plastic film and a stationary part (i.e., anode). This reads on the isolation material of the instant claim.

Regarding claim 2, the apparatus of Hartmann et al. is structurally capable of electroplating the conductive structure of the instant claim. Furthermore, the instant claim is directed to a material or article worked upon. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). MPEP 2115.

Regarding claim 5, Hartmann et al. teaches that the device comprises at least one processing module (6-8, Fig. 1) containing the processing liquid and the at least one counter electrode (24), the work pieces (1) being conveyed there through in a horizontal direction of transport, the at least one processing module (6-8) comprising, on

the entrance and on the exit side thereof respectively, at least one passage for the work pieces (1) to enter and to exit said module and the at least one contacting electrode (9-16) being disposed on the passages.

Regarding claim 8, Hartmann et al. teaches partition members (20, 22) which comprise passages and sealing members (20, 22) for passage of the work pieces (1), the partition members being disposed between the at least one contacting electrode (9-16) and the processing liquid, said sealing members (20, 22) being disposed in such a manner that processing liquid can be prevented from coming into contact with the at least one contacting electrode (9-16).

Regarding claim 9, Hartmann et al. teaches that the sealing members are selected from the group comprising squeezing rollers (column 9 line 52).

Regarding claims 10 and 21, Hartmann et al. teaches the apparatus as described above. Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the contacting electrodes are secured to the partition wall or the electrodes are disposed on a common carrier frame. However, since Hartmann et al. teaches that the contacting electrodes are positioned outside of the electroplating chamber, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have secured the electrodes on any walls outside of the plating chamber in order to prevent the plating solution from contacting the electrodes. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have disposed the contacting electrodes and counter

electrodes on a common carrier frame in order to facilitate construction of the apparatus.

Regarding claim 11, Hartmann et al. teaches roller contacts (column 3 lines 33-35).

Regarding claim 12, since the dimensions of the instant claim is relative, the apparatus of Hartmann et al. meets the limitation.

Regarding claims 13 and 14, since the plastic foam has open pores (column 4 lines 10-20), it is ion-permeable.

Regarding claim 17, Hartmann et al. teaches that the electrodes are elongated and are oriented substantially parallel to the conveying path (Fig. 1).

Regarding claim 18, Hartmann et al. teaches that the contacting electrodes are cathodically polarized since the substrate is being electroplated.

Regarding claim 19, the anode of Hartmann et al. is insoluble since it does not dissolve.

Regarding claim 20, the anode of Hartmann et al. is a flood anode since it has holes for allowing a passage of the plating solution.

Regarding claims 22 and 23, Hartmann et al. teaches a first and second storage facility 2 and 4.

Regarding claim 36, Hartmann et al. teaches a plurality of electrolysis regions (Fig. 1).

Regarding claim 37, Hartmann et al. teaches and upper anode 24 and a lower anode 25 (Fig. 2).

Regarding claim 38, Hartmann et al. teaches that the isolation material (i.e., plastic foam, column 4 lines 10-20) is positioned between the plastic film and the anode.

Regarding claim 39, it is the examiner's position that the processing liquid is under pressure in the electroplating chamber of Hartmann et al., since the processing liquid is pumped into the chamber and the chamber is sealed by the squeegee rollers.

Regarding claim 40, Hartmann et al. teaches sealing rollers 22 (Fig. 2).

Regarding claim 41, Hartmann et al. teaches sealing rollers 22 (Fig. 2), but does not explicitly teach an auxiliary sealing roller. However, providing the additional auxiliary sealing roller would have been duplication of the subject matter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the auxiliary sealing rollers by duplicating the sealing rollers of Hartmann et al. in order to provide additional sealing to the electroplating chamber.

Regarding claim 42, since the plastic foam has open pores (column 4 lines 10-20), it is ion-permeable.

Regarding claim 43-47, since the plastic foam is positioned between the plastic film and the anode, it prevents the plastic film from contacting the anode.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Hirt et al. (US patent 4282073).

Hartmann et al. teaches the apparatus as described above. Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the conveying path leads into the surface of the processing liquid. It appears that the

instant claims are directed to vertically immersing the substrate into the processing liquid in a plating tank.

Hirt et al. teaches an apparatus for continuously electroplating a strip substrate in a plurality of plating tanks wherein the substrate is vertically immersed into the plating tank.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Hartmann et al. using the conveying path of Hirt et al., because it would enable the continuous plating of a strip substrate.

Claims 15, 16 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Avellone (US patent 4401523).

Hartmann et al. teaches the apparatus as described above.

Regarding claim 15, Hartmann et al. differs from the instant claims in that the reference does not explicitly teach whether the conveying path is inclined. Avellone teaches electroplating apparatus for plating a metallic strip wherein the strip path is inclined to the horizontal. This improves the plating uniformity and performance (column 11 lines 1-6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the inclined conveying path of Avellone in the apparatus of Hartmann et al., because it would improve the plating uniformity and performance (column 11 lines 1-6 of Avellone).

Regarding claim 16, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a rinsing facility for cleaning the contacting electrodes of Hartmann et al. in order to remove the plating solution from the contacting electrodes.

Claims 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. in view of Geissler et al. (US 6238529).

Hartmann et al. teaches the apparatus as described above. Hartmann et al. differs from the instant claims in that the reference does not explicitly teach inner partition walls.

Geissler et al. teach an electroplating apparatus for treating printed circuit boards that are continuously guided in a plane of convenience in a substantially horizontal direction, and apparatus comprising an electroplating chamber having inner and outer walls 17 (Fig. 1).

Addressing claims 48-50, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have incorporated the inner walls of Geissler et al. in the apparatus of Hartmann et al., because it would improve the sealing of electroplating chamber.

Addressing claim 51, since Hartmann et al. teaches using the squeezing rollers for containing the electrolyte within the electroplating chamber (column 10 lines 25-30), it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided additional sealing means such as sealing lips of

the instant claim in order to further enhance the sealing of the electrolyte within the electroplating chamber.

Response to Arguments

Applicant's arguments filed have been fully considered but they are not persuasive. In the arguments presented on page 13-14 of the amendment, the applicant argues that Hartmann et al. teaches away from reducing the length of the electroplating chamber because Hartmann et al. teaches providing a plastic foam to prevent the plastic film from touching the anode. The examiner respectfully disagrees with the applicant's conclusion. While Hartmann et al. teaches that the span of electroplating chamber can be extended by using the plastic foam (column 4 lines 10-20), this does not teach away from the ability or desire to reduce the length of electroplating chamber. The plastic foam is merely intended to improve the stability of the plastic film so that it does not buckle (column 4 lines 16-20) and touch the anode in a longer chamber (column 3 lines 15-17). This has nothing to do with whether the length electroplating chamber can be reduced.

The applicant further presents on page 14 a scenario where if small structures of 2-5 cm, such as those in the present invention, are treated in the electroplating apparatus of Hartmann et al., a voltage drop would not be an issue and therefore one would not be motivated to change the spacing of electroplating chamber. This argument is deemed to be unpersuasive, because it is understood to one having ordinary skill in the art that a voltage drop within the plastic film is proportional to the

length of the plastic film because of the sheet resistance of the structure on the plastic film, therefore a longer electroplating chamber would have a larger voltage drop in the structure of the plastic film.

The applicant states that since the structures located between the bonding devices (i.e., cathodes) are not contacted by the bonding device, they would not experience a voltage drop. The applicant is making this conclusion based on the assumption that the structures on the plastic film are not electrically connected to each other. However, if the structures between the bonding devices are not electrically connected to each other on the plastic film, then they would not be electroplated, therefore the applicant's assumption is unreasonable. There would be no reason then for using the chamber length of Hartmann et al. when electroplating such small structures. As stated above, it is understood to one having ordinary skill in the art that when designing an apparatus, the size and relative proportion of the apparatus features can be selected to have the appropriate dimensions in order to accommodate the substrate or the structures on the substrate to be treated. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (MPEP 2144.04(IV)).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **LUAN V. VAN** whose telephone number is (571)272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

LVV
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